

Captain Gerald Martin had sent home, from the seat of war, a paper *On the Afghan War—the Kurum Valley*.—Captain Martin wrote from the Peiwar Kotal, and he reported on the survey operations conducted by officers of the Indian Survey Department attached to the "Kurum Column" of the Afghan expeditionary force. The area comprised the whole of the Kuram Valley and the district of Khost to the south, representing an addition to our geographical knowledge of 4,500 square miles. The paper concluded with a very interesting account of the botany of the Kuram Valley and of its forest-clad slopes (which was furnished by Dr. Aitchison), and with a detailed account of the Hill tribes. The inhabitants of the Kuram Valley are agriculturists and their irrigation works gave evidence of immense labour. A paper by Captain R. Beavan was read describing the country between Kandahar and Girishk.

Lieutenant St. George C. Gore described the *Pishin Valley*, which is now to be annexed by the British Government. Its extreme length is about 48 miles, and its average width including the hill ranges on either side, from 25 to 30 miles. It is a perfectly open, nearly flat, alluvial plain, with a very barren aspect owing to the absence of trees, except fruit trees in a few gardens.

SECTION F—ECONOMIC SCIENCE AND STATISTICS

Prof. Leone Levi delivered an address upon *The Scientific Societies in Relation to the Advancement of Science in the United Kingdom*.—The importance of the subject, and the renewed effort to rear a building in the Metropolis for several scientific societies, now insufficiently accommodated, had induced him to submit the paper. In the seventeenth century there were only two scientific societies in this country; but at the present time, in an age often described as wholly given to the ignoble occupation of money-making, the calendar exhibited an amount of activity quite unknown at former periods. The membership of the three Royal Societies was then mentioned, and Prof. Levi gave many interesting particulars of societies instituted for the promotion of the physical and mathematical sciences, natural history and biology, archaeology and geography, the applied sciences, and instanced a large number of miscellaneous societies. Altogether, including local scientific societies, the number of members of scientific societies in the United Kingdom is about 60,000, or deducting ten per cent. representing those belonging to several societies, about 54,000 individual members. But even that could be scarcely considered as representing men of science, and probably about 25,000 persons was the number of people who had any recognised status in the world of science, or who were actually engaged in the pursuit of science within the British Isles. Some facts were then given as to the income of scientific societies.

Eliminating from the total vote the amount expended for elementary education, the proportion devoted to science and art has been considerably diminished. In 1835, the Government of the day voted 65,000*l.* for elementary education, and 70,000*l.* for science and art, or a proportion of 52 per cent. for science and art. In 1878, the vote for elementary education amounted to 3,624,000*l.*, and that for science and art to 529,000*l.*, or a proportion of 12 per cent. for science and art. Further, Government aid was principally given to physical and natural science, leaving a wide range of scientific exploration altogether unassisted. Great had been the achievements of science in modern times, and England owed to its cultivators a profound debt of gratitude. Our manufactures and industry, our productive power and means of locomotion, all depended for their development on the advance of science, and these scientific societies had a high economic value. Much more, however, remained to be accomplished, and England's hope to maintain her high position in productive industry must depend on the success which men of science might attain in fathoming the inexhaustible secrets of nature, on the increase in the number of patient yet ardent votaries of science, and still more on the diffusion of education and scientific knowledge among the great body of the people.

SCIENTIFIC SERIALS

Bulletin of the United States Geological and Geographical Survey of the Territories (vol. v. No. 1. Washington, February 28).—Notes on the Aphididae of the United States, with descriptions of species occurring west of the Mississippi, by Chas. V. Riley and J. Monell.—The relations of the

horizons of extinct vertebrata of Europe and North America, by E. D. Cope.—Observations on the fauna of the miocene tertiaries of Oregon, by E. D. Cope.—Notes on the birds of Fort Sisseton, Dakota territory, by Chas. E. McChesney.—Palæontological papers, No. 9.—Fossils of the Jura-trias of South-eastern Idaho, by C. A. White, M.D.—Jura-trias Section of South-eastern Idaho and Western Wyoming, by A. C. Peale, M.D.—Fossil forests of the volcanic tertiary formations of the Yellowstone National Park, by W. H. Holmes.—Palæontological Papers, No. 10.—Conditions of preservation of invertebrate fossils, by C. A. White, M.D.—Supplement to the bibliography of North American invertebrate palæontology, by C. A. White, M.D., and H. Alleyne Nicholson. This supplement embraces publications which have been made during the year 1878, and also all the omissions pertaining to the first list issued as No. 10 of the Miscellaneous Publications of the U.S. Geological Survey. The year 1878 was not productive of many memoirs on North American invertebrate palæontology. Dr. White records the publications made in the United States, Prof. Nicholson those made in British North America, West Indies, and Europe.

THE *Verhandlungen der k. k. geologischen Reichsanstalt, Wien* (No. 10, 1879) contain the following papers:—On a new occurrence of celestine in the Banat Mountains, by Fr. von Hauer.—On the distribution of Silurian deposits in the Eastern Alps, by G. Stache.—On a peculiar variety of the greenstone of Dobbschau, by S. Roth. The peculiarity of this rock consists in its copious tenor of calcspar, beside felspar and hornblende. Apart from these principal constituents, augite, diallage, and secondary quartz are represented in the mixture. Here and there the hornblende incloses small crystals of pyrites and of nickeline.—On *Cyclocadia major*, Lindl. and Hutt., by Karl Feistmantel.—On a collection of petrifications from the Silurian deposits made by Herr M. Dusch at Beraun, by Prof. G. Laube.—On the recent eruption of Mount Etna, by Ad. Pereira. The author gives a somewhat scanty description of an ascent he made during the last eruption, during which he actually reached the active crater.—The last paper in the number is a valuable account of an excursion into the district between the Bosna and Drina Rivers (Bosnia), by Dr. E. Tietze.

THE *Rendiconto delle Sessioni dell' Accademia delle Scienze dell' Istituto di Bologna* (1878-79).—From this part we note the following papers:—Observations on some habits of *Vespertilio murinus*, L., and on some studies in comparative anatomy connected with this animal, by Sig. Ercolani.—Notes on an ancient Phœnician skull found in Sardinia, compared to similar skulls of the present time, by Sig. Calori.—On the decomposition of salts of a volatile base and its importance in toxicological operations, by Sig. Selmi.—Note on certain fermentations at low temperatures, by the same.—Researches on the principal phases of the annular eclipse of the sun of July 19 last, partially visible at Bologna, by Prof. Saporetì.—On the ossification of the humor vitreus of the human eye, and on some other strange modifications of the same, by Sig. Ciaccio.—On the equilibrium of plane polygons of variable form, by Sig. Ruffini.—On a new hydrotachimeter, by Sig. Cesare Razzaboni.—On some researches in analytical geometry, by Sig. Beltrami.—On the thermal and galvanometrical laws governing the formation of the electric spark in gases, by Sig. Villari.—Contributions to the fossil conchology of Italy, by Sig. Foresti.—On the excreting apparatus of *Janus cristatus* by Sig. Trinchese.—On the ossiferous breccia of the S. Teresa cave, by Sig. Capellini.—On the flora of the province of Bologna (third paper), by Sig. Cocconi.—On the history of geodesy in Italy, by Sig. Riccardi.—On a Holtz's machine of special construction, by Sig. Righi.—Chemical researches on the metamorphoses of the marbles of Carrara and of Monte Pisano, by Prof. Santagata.—On the deposits and genesis of phosphates generally and their use in agriculture, by Sig. Predieri.—On the motion of water in vessels communicating by long tubes, by Sig. Cesare Razzaboni.—On the quantitative analysis of mixtures containing alkaline sulphides, carbonates, sulphates, and hyposulphates, by Sig. Cavazzi.—On the origin of the optical nerve in the brain of fishes, by Sig. Bellonci.—On the structure of so-called cellular and parenchymatose cartilage, by Sig. Ciaccio.—On some products of arsenical putrefaction, by Sig. Selmi.—On the thermal and galvanometric laws of the induction spark, by Sig. Villari.

THE *Journal of the Russian Physico-Chemical Society* of St. Petersburg (tome xi. No. 6) contains the following papers of

interest;—On some cinchonin compounds, by M. A. Wischnegradsky.—On the origin of milk, by M. L. Schichkoff.—On isotributylene by M. A. Butlerow.—Researches on the nucleine of milk, by M. N. Lubavin.—Analysis of the water of the Oka river, as well as of the sources which supply the aqueduct of Nishnii Novgorod, by M. N. Socoloff.—On β chloropropionic aldehyde, by M. G. Krestownikoff.—On β chlorobutyric aldehyde, by M. J. Karetnikoff.—On homoitaconic acid, by MM. G. Krestownikoff and W. Markownikoff.—On the products of dry distillation of phthalate of calcium, by M. O. Miller.—On the tenor of nitrogen in the detonating nitroethers, by M. J. Tcheltzoff.—On some applications of the mechanical theory of heat to the variations in the state of an elastic body, by N. Schiller.—On the influence of hydrogen on the volumes and on the elasticity co-efficients of palladium and its alloys, by N. Hesehus.

THE *Rivista Scientifico Industriale* (Nos. 14 and 15).—From these parts we note the following papers:—On the subdivisibility of the electric light, by Prof. Rinaldo Ferrini.—Observations of Swift's comet, made at the Royal Observatory of Brera, at Milan, by Prof. G. V. Schiaparelli.—On the non-existence of nascent hydrogen and the reduction of perchlorate of potash, by Dr. D. Tommasi.—On the smallest species of the Araceæ family, by Prof. O. Beccari. The name given to the new species by the professor is *Microcasia pygmaea*.—On the presence of lithium salts in the sea-water between Pozzuoli and Castellammare, by Prof. S. de Luca.—On the synthesis of sulphuretted and seleniuretted hydrogen, by Prof. A. Januario.—On red amber, by Prof. Capellini.—On the phenomena of acoustic attraction and repulsion, by Prof. Tito Martini.—On a new seismological instrument called "Ascoltatore endogeno" (endogenous listener), constructed by Prof. Giovanni Mugna.

SOCIETIES AND ACADEMIES

PHILADELPHIA

Academy of Natural Sciences, January 7.—Description of a new species of goniobranchus, by Andrew Garrett.

January 14.—List of land shells inhabiting Rurutu, one of the Austral Islands, by A. Garrett.

January 21.—Notes on some Pacific Coast fishes, by W. N. Lockington.

January 28.—Further notes on the mechanical genesis of tooth-forms, by J. A. Ryder.—Note on hyraceum, by Drs. Greene and Parker.—Morphological notes on the limbs of the amphiumideæ, by J. A. Ryder.—The land shells of the Mexican Island of Guadeloupe, by W. G. Binney.

February 4.—Prof. Leidy on fossil remains of a caribou deer.

February 11.—On the parasol ant, by Rev. H. C. McCook.

February 18.—Structure of chimpanzee, by Dr. Chapman.

February 25.—Descriptions of three new species of calcolidæ from Upper Silurian, by V. W. Lyon.

March 11.—Nudibranchiate gastropods of North Pacific, by Dr. R. Bergh.—On the variability of *Sphæria quercuum*, by J. B. Ellis.—Notes on *Opuntia prolifera*, by T. Meehan.

March 25.—Notes on *Amphiuma*, by Dr. Chapman.—On a new genus and species of *Scombridae*, by W. N. Lockington.

PARIS

Academy of Sciences, September 1.—M. Daubrée in the chair.—M. Faye presented, in the name of the Bureau des Longitudes, the *Connaissance des Temps* for 1881, and mentioned the improvements introduced.—The following papers were read:—Mathematical theory of the oscillations of a double pendulum by Mr. Peirce; note by M. Faye.—Note on solar temperatures, by M. Janssen. The expression, *temperature of the sun*, is wanting in precision, and the methods of measurement adopted are faulty, in view of the want of homogeneity in the solar surface, and the vast envelopes which prevent the radiation reaching us in all its force. To conclude the temperature of the photosphere from its radiating power, one should know the emissive power (which is, however, unknown to us). The common methods may give truly the calorific force of solar radiation which reaches the earth's surface, but they give no exact notions of even an average temperature (which expression, indeed, is inapplicable to the sun). M. Janssen's efforts are now directed to a study of the sun in each of its distinct parts, employing analytical methods, and especially photography of the spectra of portions studied.—On the chemical constitution of alkaline

amalgams, by M. Berthelot. The addition of solid mercury to amalgams containing already several equivalents of this metal liberates little or no heat, just as in the addition of solid water to saline hydrates, which already contain several equivalents of water; nearly all the heat or work having been developed in the previous combination. This gives a new relation between saline hydrates and metallic alloys.—On the projects of an American maritime canal, and of communication between Algiers and Senegal, by M. de Lesseps. He presented a volume of proceedings of the International Congress and reports relating to the former scheme. As to the latter, he thinks it would be well to commence by establishing telegraph stations at various points where water is obtainable.—On a means of diminishing the loss of *vis viva* in a divergent ajutage of large dimensions, the angle of which is too open, and which may be divided into several by conical surfaces having the same axis, by M. de Caligny.—On a process of obtaining in any ball governor the degree of isochronism desired, &c.; practical rules, by M. Leauté.—Anatomical and morphological researches on the nervous system of insects, by M. Brandt. *Inter alia*, it is untrue that all insects have a sub-cesophagean ganglion separate from the others (*Rhizotrogus*, *Stylops*, and *Hydromedra* have not). The circumvolutions of the brain are found in all insects, in various development, and the development differs in individuals of the same species. In general, the development of the hemispheres, but not of the whole brain, is related to instincts and habits. In some insects having two thoracic ganglions, the first is simple, the second compound; in others both are compound. The transformation of the nervous system takes place in some insects by reduction of the number of ganglions; in others by an opposite process.—On two new elements in erbium, by M. Cléve. The spectrum of the old erbium is attributed to three distinct oxides. The two new elements he designates *Thulium* (from Thule, the old name of Scandinavia) and *Holmium* (a derivative from the Latinised name of Stockholm).—Prof. Lawrence Smith remarked on the doubts of some *savants* as to the results of recent study of earths of the yttrium and cerium group.—Partial synthesis of milk-sugar and contribution to synthesis of cane-sugar, by M. Demole.—Reaction of tungstates in presence of mannite, by M. Klein.—On the determination of urea; reply to M. Esbach, by M. Méhu.—On the physiological effects of formiate of soda, by M. Arloing. It lowers the animal temperature, accelerates the respiratory movements, &c., is poisonous when the dose exceeds 1 gr. per kilog. of weight of the animal. It might be advantageously used for salicylate of soda in some cases.—On some facts relating to contraction, by MM. Brissand and Richet.—Morphological and zoological researches on the nervous system of dipterous insects, by M. Künckel.—On the plurality of nuclei in certain plant cells, by M. Treub.

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